

REMARKS/ARGUMENT

Claims 1-9 are pending in this application. Claims 1-9 stand rejected and claim 4 is objected to. By this Amendment, claims 2, 3 and 4 have been amended. The amendments made to the claims do not alter the scope of these claims, nor have these amendments been made to define over the prior art. Rather, the amendments to the claims have been made to improve the form thereof. In light of the amendments and remarks set forth below, Applicant respectfully submits that each of the pending claims is in immediate condition for allowance.

The Examiner rejected claims 2 and 3 under 35 U.S.C. §112, second paragraph. In accordance with the Examiner's remarks, and to more clearly define the invention, Applicant has amended claims 2 and 3. As a result, Applicant requests that the Examiner withdraw the rejection under 35 U.S.C. § 112.

Claim 1 is rejected as being anticipated by U.S. Patent No. 5,172,417 (Iwamura). Applicant requests reconsideration and withdrawal of this rejection.

Among the limitations of independent claim 1, which are neither shown nor suggested in the art of record

a processor for comparing in real time a direct output signal from the microphone with an output signal from a sound source with reference to a frequency characteristic and an echo characteristic of the sound regenerated from the loudspeaker, or a reverberation characteristic of the sound, including the delay time for the echo characteristic or the reverberation characteristic, *and correcting a signal from the sound source using the difference in output signal*

between the microphone and the sound source by reference to the frequency characteristic and the echo characteristic or the reverberation characteristic.

To anticipate a claim under 35 U.S.C. § 102, the cited reference must disclose every element of the claim, as arranged in the claim, and in sufficient detail to enable one skilled in the art to make and use the anticipated subject matter. See, PPG Industries, Inc. v. Guardian Industries Corp., 75 F.3d 1558, 1566 (Fed. Cir. 1996); C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1349 (Fed. Cir. 1998). A reference that does not expressly disclose all of the elements of a claimed invention cannot anticipate unless all of the undisclosed elements are inherently present in the reference. See, Continental Can Co. USA v. Monsanto Co., 942 F.2d 1264, 1268 (Fed. Cir. 1991).

As illustrated in Figure 14, Iwamura discloses a an apparatus for controlling acoustical transfer characteristics including

fuzzy surrounding processor 14 [that] takes in the audio input signal 11, measures the reverberation characteristics and performs fuzzy computation by using the actual reverberation characteristics and the desired reverberation characteristics as decision factors to change the characteristics of the low pass filters LPF1, LPF2, LPF3 and the delay circuits D1, D2 thereby obtaining the desired reverberation characteristics and effectively improving the presence based on the volume of the reproduced sound.

(col. 10, lns. 52-62). Iwamura measures the reverberation of the sound from the ^{not disclosed in specification} loudspeaker (11) and compares it to a desired reverberation (stored in memory 4) and adjusts the decision factors (in element 6) in order to obtain the desired reverberation

characteristics. Thus, Iwamura compares an output of the loudspeaker to some predefined characteristic that is stored in memory.

In contrast, Applicant's claimed invention compares the output of the microphone and the actual original sound source that is driving the loudspeaker. Applicant's claimed invention is thus comparing the output of the loudspeaker to a completely different signal than that used in Iwamura. In Iwamura, the original sound source is designated as signals 19 and 20. These signal in Iwamura are never compared to the output of the microphone 11 as required by claim 1. Thus, Iwamura fails to disclose comparing the output of the sound source and the output of the microphone as recited in Applicant's claim. Thus, claim 1 is allowable.

Claims 4, 6, and 8 depend from, and contain all the limitations of claim 1. These dependent claims also recite additional limitations which, in combination with the limitations of claim 1, are neither disclosed nor suggested by Iwamura and are also directed towards patentable subject matter. Thus, claims 4, 6, and 8 should also be allowed.

Therefore, it is asserted that the rejection of claims 1, 4, 6, and 8, under 35 U.S.C. § 102 has been overcome. Reconsideration of the rejection of claims 1, 4, 6, and 8, under 35 U.S.C. § 102 is respectfully requested in light of the amendments and remarks above.

New claim 10 is allowable for the same reasons as claim 1 above.

Applicant has responded to all of the rejections and objections recited in the Office Action. Reconsideration and a Notice of Allowance for all of the pending claims is therefore respectfully requested.

The amendments to the claims are for clarification purposes only and are not intended to limit the scope of the claims in any way. It is asserted that the present amendment places the application in a form for allowance. Entry of this amendment is therefore earnestly solicited.

If the Examiner believes an interview would be of assistance, the Examiner is welcome to contact the undersigned at the number listed below.

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Respectfully submitted,

By 

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APPENDIX A
Complete Set of Claims Under 37 CFR § 1.1215

F 1. (Currently and Previously Amended) A loudspeaker unit for a sound source, the loudspeaker unit being adaptable to changing environments, the loudspeaker unit comprising:

- a loudspeaker;
- a microphone for picking up sound regenerated from the loudspeaker;
- a processor for generating a difference by comparing, in real time, a direct output signal from the microphone with an output signal from a the sound source with reference to a frequency characteristic and an echo characteristic of the sound regenerated from the loudspeaker, or a reverberation characteristic of the sound, including the a delay time for the echo characteristic or the reverberation characteristic, and the processor further generating a processor output by correcting a the output signal from the sound source using the difference in output signal between the microphone and the sound source by reference to the frequency characteristic and the echo characteristic or the reverberation characteristic; and
- an amplifier for amplifying the processor output of the processor.

object 2. (Currently and Previously Amended) A loudspeaker unit adapted to the environment according to Claim 1 wherein said processor for correcting the signal from said sound source comprising:

- a first A/D converter for performing digital conversion of a sound signal outputted from the sound source;
- a memory for storing the a converted voice data of samples taken within a fixed time determined as a subject time for the delay of the reverberation characteristic and or the echo characteristic;
- a second A/D converter for performing digital conversion of the feedback signal outputted from said microphone as the feedback data;

a successive comparison analysis part for successively comparing said feedback data with the stored voice data, analyzing the intensity of the reverberation characteristic ~~and or~~ the echo characteristic and outputting the result as a correction parameter;

a regenerative signal processing part for adding data corrected by said correction parameter to the stored voice data and processing the result as the regenerative data; and

a D/A converter for converting said regenerative data to an analog signal.

3. (Currently and Previously Amended) A loudspeaker unit adapted to the environment according to Claim 1 wherein ~~said~~ a successive comparison analysis part performs processing by adding antiphase feedback data to ~~said~~ voice data so that the difference between said voice data obtained as the serial data and said feedback data becomes a fixed value or 0.

4. (Currently and Previously Amended) A loudspeaker unit adapted to the environment according to Claim 1 wherein,
the frequency comparison of the characteristic and the comparison ~~o~~ of the characteristic of the echo or the reverberation each including the delay time are learned by arithmetic and a signal to be sent to the loudspeaker is corrected according to the learned result.

5. (Previously Amended) A loudspeaker unit adapted to the environment according to Claim 2, wherein, the frequency comparison of the characteristic and the comparison of the characteristic of the echo or the reverberation each including the delay time are learned by arithmetic and a signal to be sent to the loudspeaker is corrected according to the learned result.

6. (Previously Amended) A loudspeaker unit adapted to the environment according to Claim 1 wherein,
the frequency comparison of the characteristic and the comparison of the characteristic of the echo or the reverberation each including the delay time are intermittently performed and a signal to be sent to the loudspeaker is corrected according to the comparison result.

7. (Previously Amended) A loudspeaker unit adapted to the environment according to claim 2, wherein, the frequency comparison of the characteristic and the comparison of the characteristic of the echo or the reverberation each including the delay time are intermittently performed and a signal to be sent to the loudspeaker is corrected according to the comparison result.

8. (Previously Amended) A loudspeaker unit adapted to the environment according to Claim 4 wherein,
the frequency comparison of the characteristic and the comparison of the characteristic of the echo or the reverberation each including the delay time are intermittently performed and a signal to be sent to the loudspeaker is corrected according to the comparison result.

9. (Previously Amended) A loudspeaker unit adapted to the environment according to Claim 5 wherein,
the frequency comparison of the characteristic and the comparison of the characteristic of the echo or the reverberation each including the delay time are intermittently performed and a signal to be sent to the loudspeaker is corrected according to the comparison result.

10. (New) A loudspeaker unit for a sound source, the loudspeaker unit being adaptable to changing environments, the loudspeaker unit comprising:
a loudspeaker;
a microphone for picking up sound regenerated from the loudspeaker;
a processor for generating a processor output by correcting an output signal from the sound source using a difference in a direct output signal from the microphone with an output signal from the sound source with reference to a frequency characteristic and an echo characteristic of the sound regenerated from the loudspeaker, or a reverberation characteristic of the sound, including a delay time for the echo characteristic or the reverberation characteristic;
and

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an amplifier for amplifying the processor output.
